A NEW SPECIES OF THE SUBGENUS *POLYRHACHIS (CYRTOMYRMA)* FOREL (HYMENOPTERA: FORMICIDAE: FORMICINAE) FROM BORNEO

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Abstract

Polyrhachis acuminata, a new species of the subgenus *Cyrtomyrma* Forel, is described and illustrated from Sabah, Malaysia.

Introduction

During a recent, one day visit to Poring Hot Springs in Kinabalu Park, Sabah, Malaysia, I collected a few *Polyrhachis* Fr. Smith specimens, including two that I regarded at the time to belong to a species recently described as *Polyrhachis (Cyrtomyrma) danum* Kohout (Kohout 2006). These specimens featured several characteristics of that species, including distinctly reddish-brown appendages and a similar mesosomal outline. However, following my return to Brisbane, closer examination of the specimens revealed them to be an undescribed species. This discovery was made too late for the species to be included in my recent revision of the Bornean fauna of subgenus *Cyrtomyrma* Forel (Kohout 2006) and consequently it is described below.

Abbreviations of institutions (with names of curators) are: ITBC = Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, East Malaysia (Dr Maryati Mohamed); QMBA = Queensland Museum, Brisbane, Australia (Dr Chris J. Burwell).

Methods

Photographs of the holotype were taken by Geoff Thompson (QMBA) with a Leica DFC500 Camera and Leica MZ16A stereomicroscope, using Leica Application Suite Software. The images were then processed using Auto-Montage (Syncroscopy, Division of Synoptics Ltd, USA) and Adobe CS2 (Adobe Systems Inc, USA) software.

Standard measurements and indices are as follows: TL = Total length (the necessarily composite measurement of the outstretched length of the entire ant measured in profile); HL = Head length (the maximum measurable length of the head in perfect full face view, measured from the anterior-most point of the clypeal border or teeth, to the posterior-most point of the occipital margin); HW = Head width (width of the head in perfect full face view, measured immediately in front of the eyes); CI = Cephalic index (HW x 100/HL); SL = Scape length (length of the antennal scape, excluding the condyle); SI = Scape index (SL x 100/HW); PW = Pronotal width (greatest width of the pronotal dorsum); MTL = Metathoracic tibial length (maximum measurable length of the tibia of the hind leg). All measurements were taken

using a Zeiss SR stereomicroscope with an eyepiece graticule calibrated against a stage micrometer and are expressed in millimetres (mm).

Polyrhachis acuminata sp. n.

(Figs 1-2)

Types. Holotype worker, EAST MALAYSIA (SABAH): Kinabalu Park, Poring Hot Springs, 06°02'N, 116°43'E, 27.vi.2006, R.J. & E. Kohout acc. 06.5. *Paratype*: 1 worker, same data as holotype. Holotype in ITBC; paratype in QMBA.

Description. Worker. Dimensions (holotype cited first): TL c. 6.55, 6.75; HL 1.59, 1.62; HW 1.50, 1.53; CI 94, 94; SL 1.96, 2.03; SI 131, 133; PW 1.18, 1.22; MTL 2.34, 2.37 (2 measured). Mandibles with 5 teeth, apical tooth longest, other teeth subequal in length. Anterior clypeal margin obtusely truncate with shallow median notch. Clypeus in profile convex with shallow depression behind anterior margin and moderately impressed basal margin. Frontal triangle indistinct. Frontal carinae sinuate with weakly raised margins; central area shallowly concave with shallowly impressed frontal furrow. Sides of head in front of eyes converging towards mandibular bases in weakly convex line; behind eyes sides rounding into convex occipital margin. Eyes moderately convex, in full face view only marginally breaking lateral cephalic outline. Ocelli lacking. Pronotum in dorsal view with humeri widely rounded, with greatest pronotal width just before mid-length of segment. Mesosoma in profile moderately convex, with promesonotal suture distinctly impressed; metanotal groove lacking dorsally, weakly indicated laterally. Propodeal dorsum with indication of rudimentary propodeal spines; rounding into relatively short, oblique declivity. Petiole with dorsal spines reduced to short, blunt, wide-based teeth; lateral spines up to four times as long as their basal width, slender and acute. Subpetiolar process relatively long, angular anteriorly, narrowly rounded posteriorly. Anterior face of first gastral segment in lateral view lower than full height of petiole, very weakly concave at base, narrowly rounding onto dorsum of segment.

Mandibles finely longitudinally striate with numerous piliferous pits; sculpture becoming rather smooth and polished towards bases. Head, mesosoma, petiole and gaster very finely shagreened, rather polished with numerous shallow punctures; sculpture becoming somewhat finely wrinkled on meso- and metapleurae. Petiole very finely transversely wrinkled, with sculpture more intensely reticulate-rugose at base.

Mandibles with numerous semierect hairs at masticatory borders. Anterior clypeal margin with several moderately long, anteriorly directed setae and a few short setae lining margin laterally. Two pairs of erect hairs arising near anterior margin and one pair along frontal carinae. Rather long, erect hairs on anterior face of fore coxae; distinctly shorter hairs on posterior face and on ventral surfaces of trochanters. Gaster with medium length, erect hairs lining posterior margins of apical segments, hairs on gastral venter more abundant.

Black, with mandibular masticatory borders, condylae and extreme tips of apical funicular segments reddish-brown. Legs, including trochanters, distinctly red or reddish-brown with proximal ends of tibiae, coxae and tarsi virtually black.

Sexuals and immature stages unknown.

Etymology. From the Latin *acuminatus*, meaning pointed, in reference to the long, sharply pointed lateral petiolar spines.

Figs 1-2. *Polyrhachis acuminata* sp. n., holotype worker: (1) dorsal view; (2) lateral view.

Remarks. Polyrhachis acuminata is very similar to *P. danum* and *P. lepida* Kohout, both also known from Sabah. All three species are distinctly bicoloured with the head, mesosoma, petiole and gaster black and most of the legs bright red or reddish-brown. They have a rather similar lateral mesosomal outline, except that the propodeal declivity is virtually vertical in *P. danum* and *P. lepida*, while it is oblique in *P. acuminata*. *Polyrhachis acuminata* is also distinguished by its rudimentary propodeal spines that are completely absent in *P. danum* or indicated only as barely visible tubercles in some *P. lepida* specimens. The mesosomal sculpturation is uniformly finely shagreened in *P. danum*, while the sides of the mesosoma are wrinkled in *P. acuminata* and distinctly reticulate-rugose in *P. lepida*. However, the main character that distinguishes the three species is the configuration of petiolar spines. In *P. danum*, all the petiolar spines are reduced to minute denticles,

while in *P. acuminata* and *P. lepida* the dorsal pair are wide-based and tooth-like and the lateral spines are long and slender. In *P. acuminata* the lateral spines are up to four times as long as their basal widths, while they are only twice as long or shorter in *P. lepida*. The species also differ in their relative sizes, with *P. lepida* the smallest and *P. danum* the largest (HL 1.40-1.50 in *P. lepida*, 1.59-1.62 in *P. acuminata* and 1.65-1.87 in *P. danum*).

Key to Bornean *P. (Cyrtomyrma)* species

Polyrhachis acuminata is the latest addition to the list of Bornean *Cyrtomyrma* species and can be identified using the following modification to the key to Bornean species in Kohout (2006). Figure numbers refer to illustrations in the original article. *Polyrhachis rastellata* (Latreille), erroneously recorded from Borneo in the past (see Kohout 2006 for details), is included in the key for completeness.

6 Larger species (HL >1.65); petiole with sides more-or-less parallel, spines reduced to minute denticles (Fig. 6F) ..... *danum* Kohout

– Smaller species (HL <1.65); petiole with sides diverging, spines acute (Fig. 7B, D) 7

7 Pronotal shoulders broadly rounded; lateral petiolar spines up to four times as long as their basal width ..... *acuminata* sp. n.

– Pronotal shoulders narrowly rounded or subangular (Fig. 7A); lateral petiolar spines at most twice as long as their basal width 8

8 Propodeal declivity very steep, virtually vertical (Fig. 7A); lateral petiolar spines distinctly longer than dorsal pair (Fig. 7B); legs dark reddish-brown ..... *lepida* Kohout

– Propodeal declivity oblique (Fig. 7C); petiolar spines subequal or lateral pair shorter than dorsal pair (Fig.7D); legs mostly orange or light reddish-brown ..... *rastellata* (Latreille)

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Reference

KOHOUT, R.J. 2006. Review of *Polyrhachis (Cyrtomyrma)* Forel (Hymenoptera: Formicidae: Formicinae) of Australia, Borneo, New Guinea and the Solomon Islands with descriptions of new species. *Memoirs of the Queensland Museum* **52**(1): 87-146.